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FIG. 2

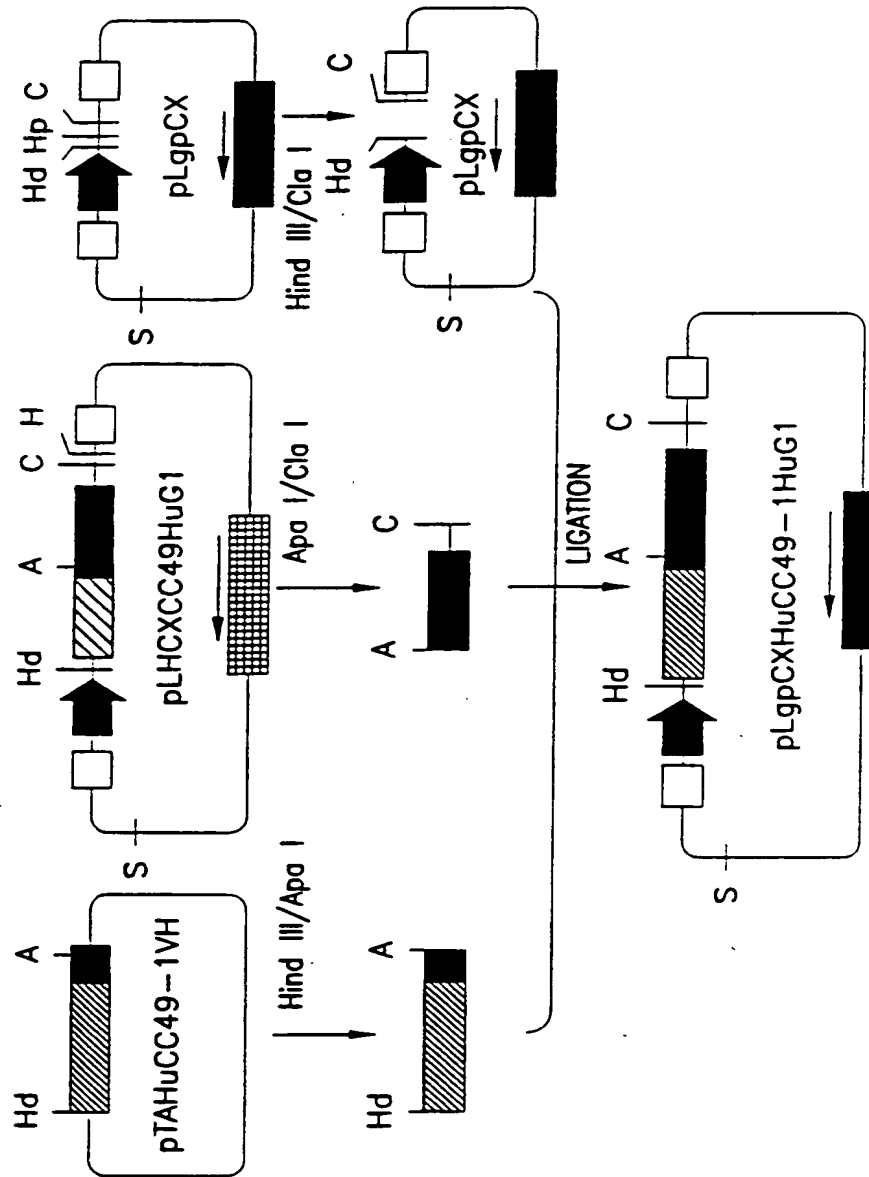
| Light chain |        | 24       | 25  | 26  | 27  | a   | b   | c   | d   | e   | f   | 28  | 29  | 30  | 31  | 32  | 33  | 34  |     |     |
|-------------|--------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| CDR 1       | HuCC49 | LEN      | Lys | Ser | Ser | Gln | Ser | Leu | Tyr | Ser | Gly | Asn | Gln | Lys | Asn | Tyr | Leu | Ala |     |     |
|             |        |          | Lys | Ser | Ser | Gln | Ser | Val | Leu | Tyr | Ser | Ser | Asn | Ser | Lys | Asn | Tyr | Leu | Ala |     |
|             |        |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| CDR 2       | HuCC49 | LEN      | Trp | Ala | Ser | Ala | Arg | Glu | Ser |     |     |     |     |     |     |     |     |     |     |     |
|             |        |          | Trp | Ala | Ser | Thr | Arg | Glu | Leu | Tyr | Ser | Ser | Asn | Ser | Lys | Asn | Tyr | Leu | Ala |     |
|             |        |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| CDR 3       | HuCC49 | LEN      | Gln | Gln | Tyr | Tyr | Ser | Tyr | Pro |     |     |     |     |     |     |     |     |     |     |     |
|             |        |          | Gln | Gln | Tyr | Tyr | Ser | Thr | Pro | Tyr | Leu | Thr |     |     |     |     |     |     |     |     |
|             |        |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Heavy chain |        | 31       | 32  | 33  | 34  | 35  | 53  | 54  | 55  | 56  | 57  | 58  | 59  | 60  | 61  | 62  | 63  | 64  | 65  |     |
| CDR 1       | HuCC49 | 21/28'CL | Asp | His | Ala | Ile | His |     |     |     |     |     |     |     |     |     |     |     |     |     |
|             |        |          | Ser | Tyr | Ala | Met | His | Gly | Asn | Asp | Asn | Phe | Lys | Tyr | Asn | Glu | Arg | Phe | Lys | Gly |
|             |        |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| CDR 2       | HuCC49 | 21/28'CL | Tyr | Phe | Ser | Pro | Gly | Asn | Asp | Asp | Thr | Lys | Tyr | Asn | Glu | Arg | Phe | Lys | Gly |     |
|             |        |          | Trp | Ile | Asn | Ala | Gly | Asn | Gly | Thr | Lys | Ser | Asn | Ser | Gln | Lys | Phe | Lys | Gly |     |
|             |        |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| CDR 3       | HuCC49 | 21/28'CL | Ser | Leu | Asn | Met | Ala | Ser | Gly | Asn | Lys | Tyr | Asn | Glu | Arg | Phe | Lys | Gly |     |     |
|             |        |          | Gly | Gly | Tyr | Tyr | Gly | Ser | Gly | Asn | Lys | Tyr | Ser | Gln | Lys | Phe | Lys | Gly |     |     |
|             |        |          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

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FIG. 3



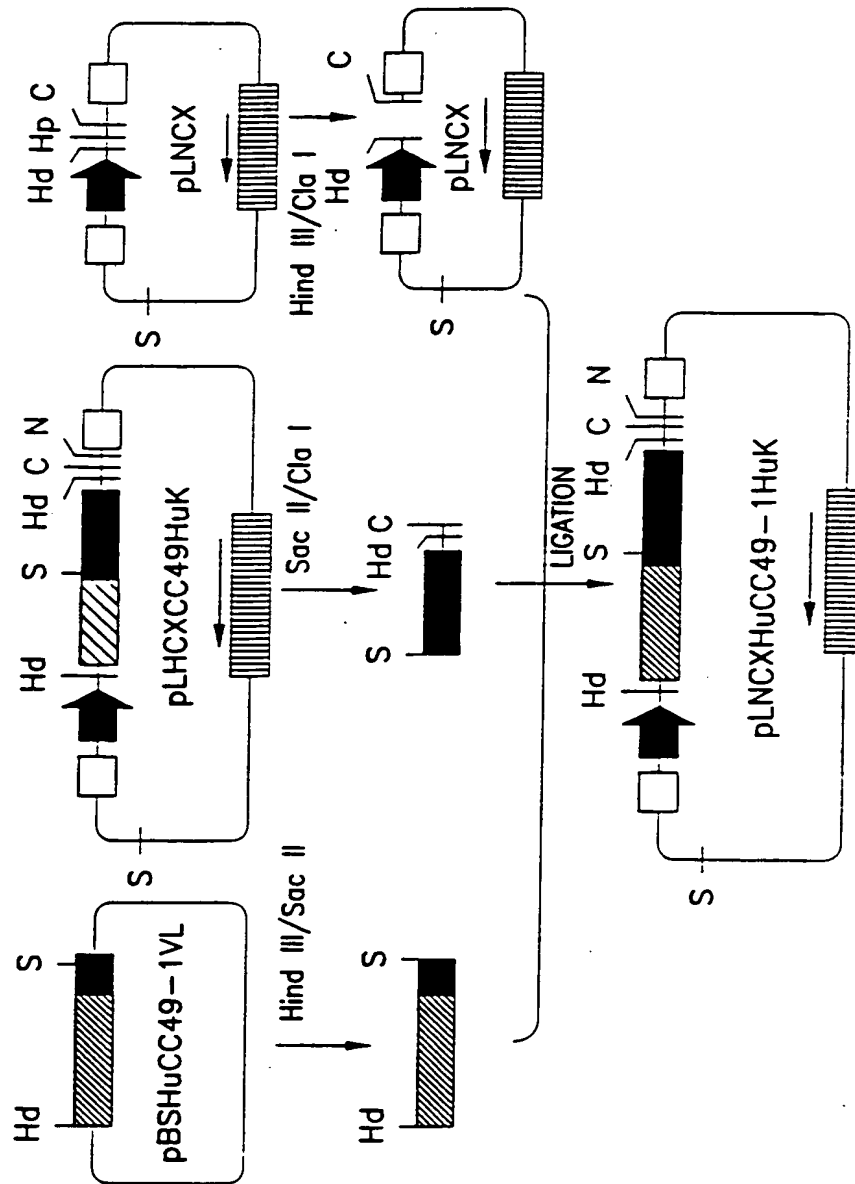
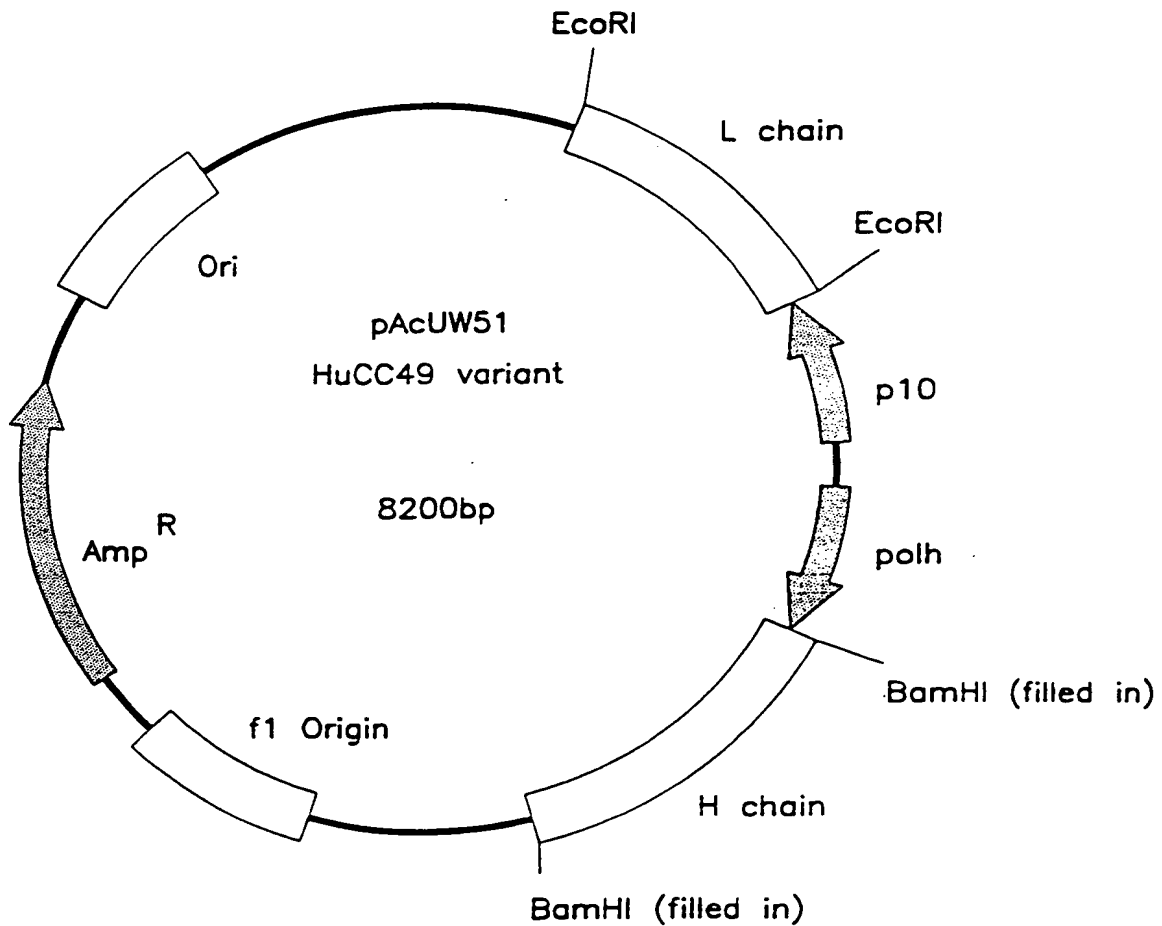


FIG. 4

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FIG. 5



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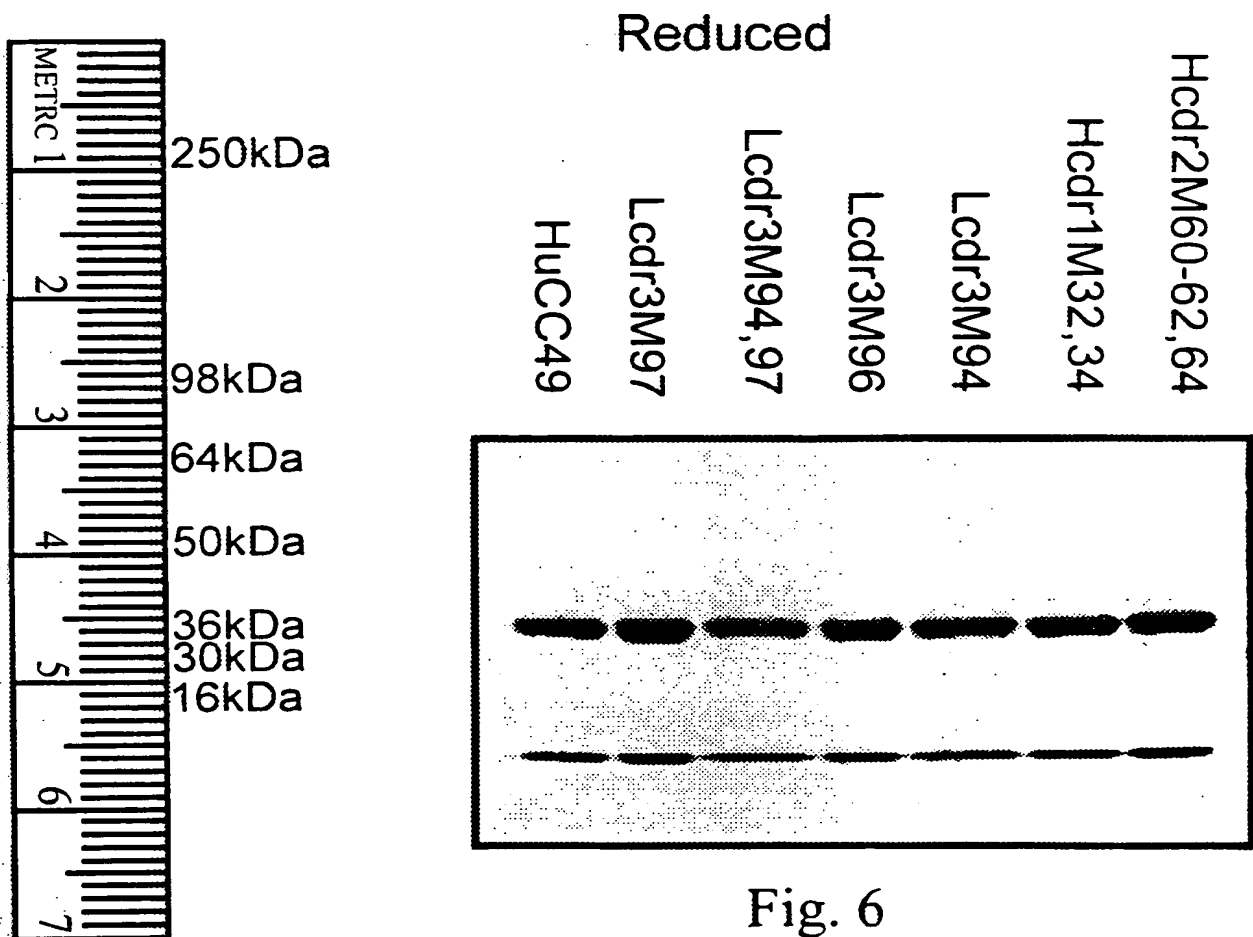


Fig. 6

FIG. 7

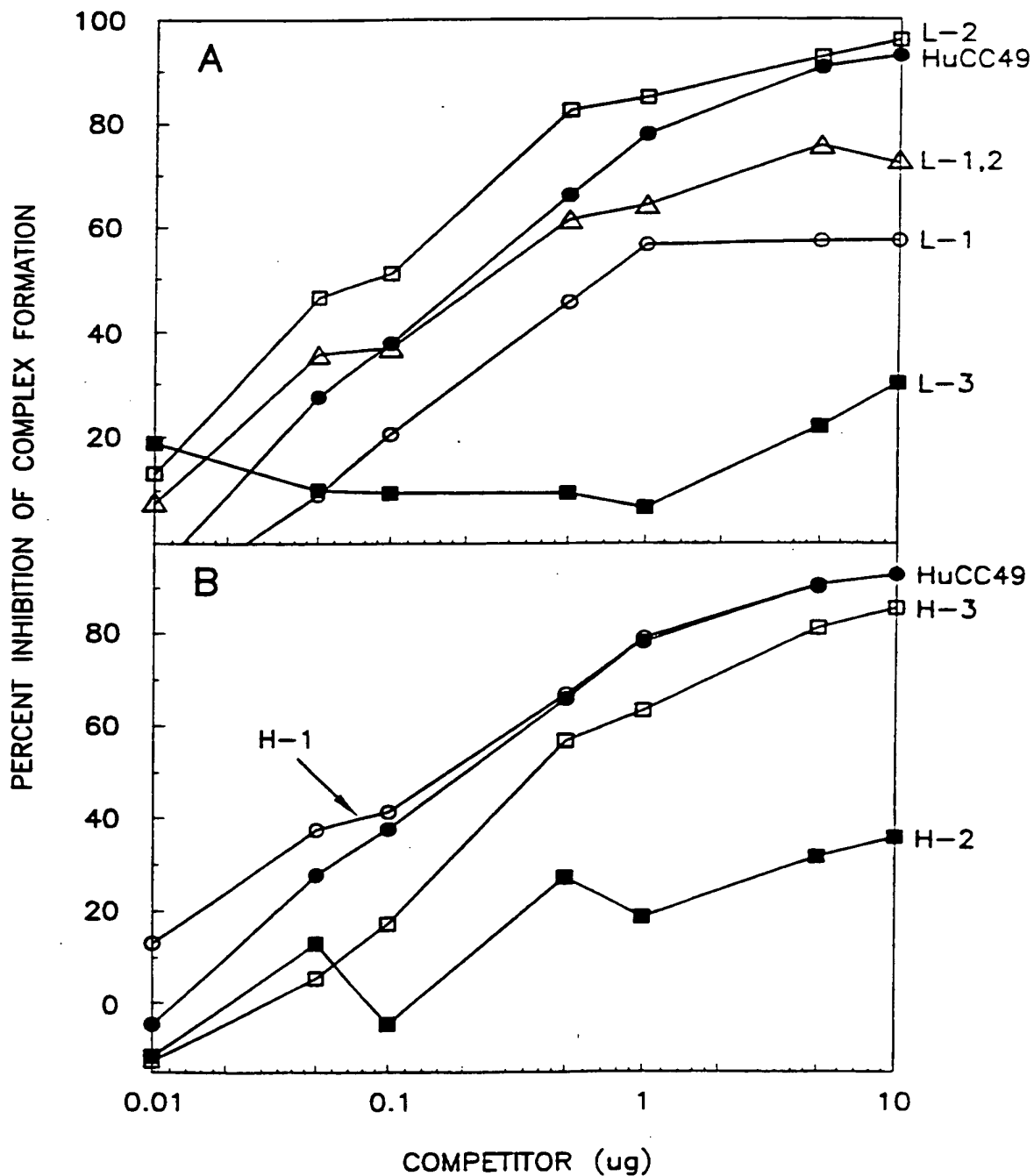
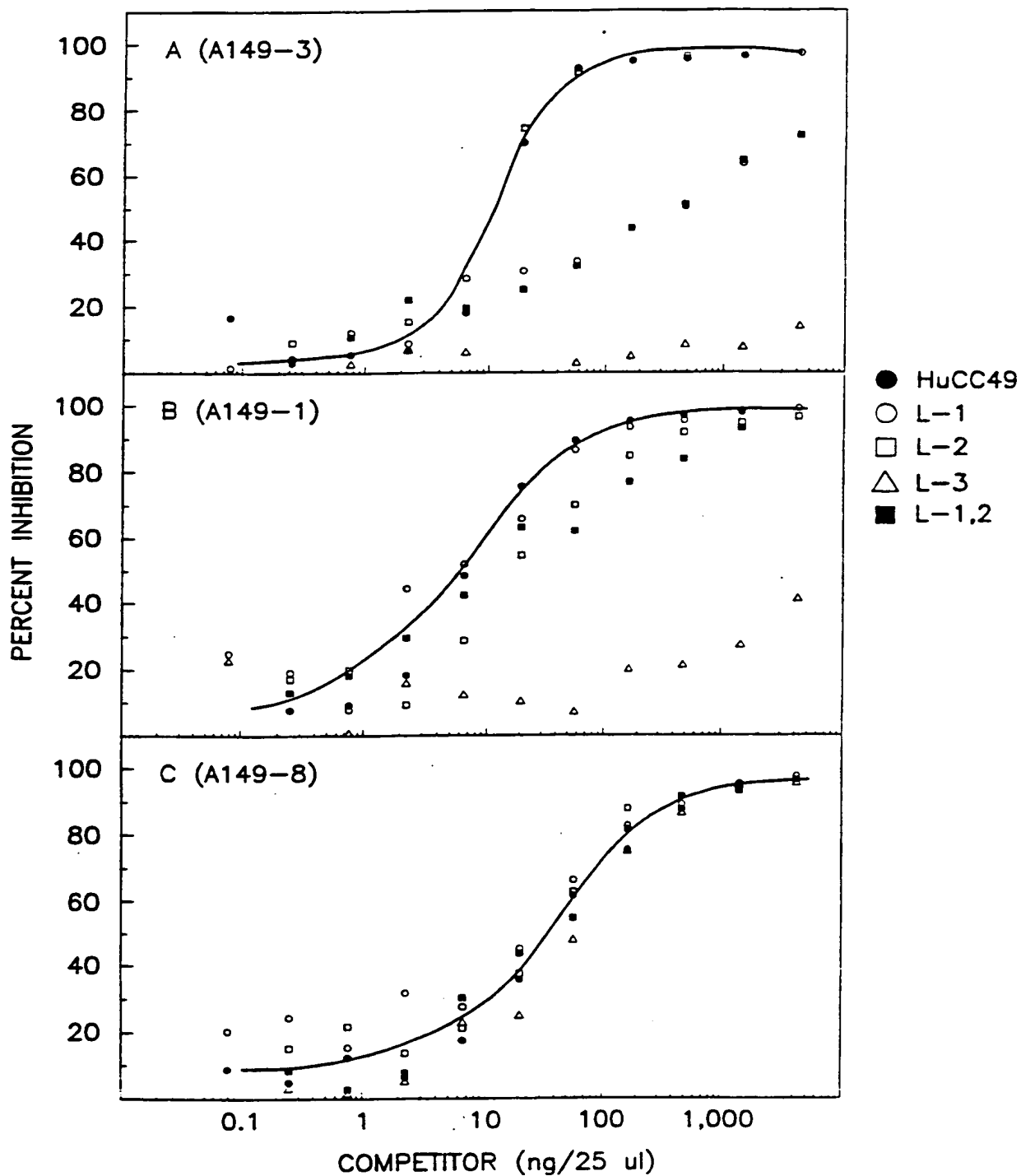


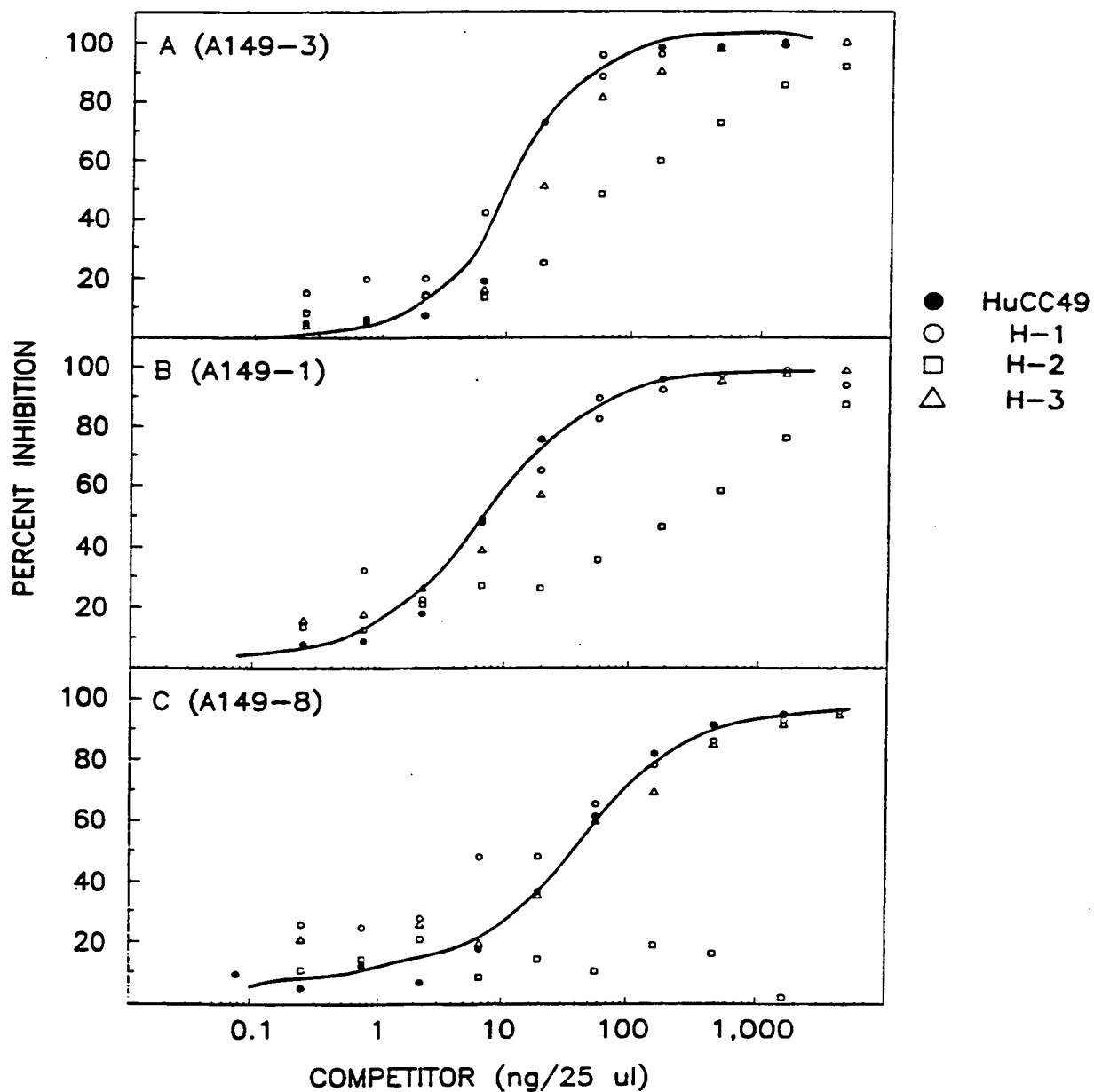
FIG. 8





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FIG. 9



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FIG. 10

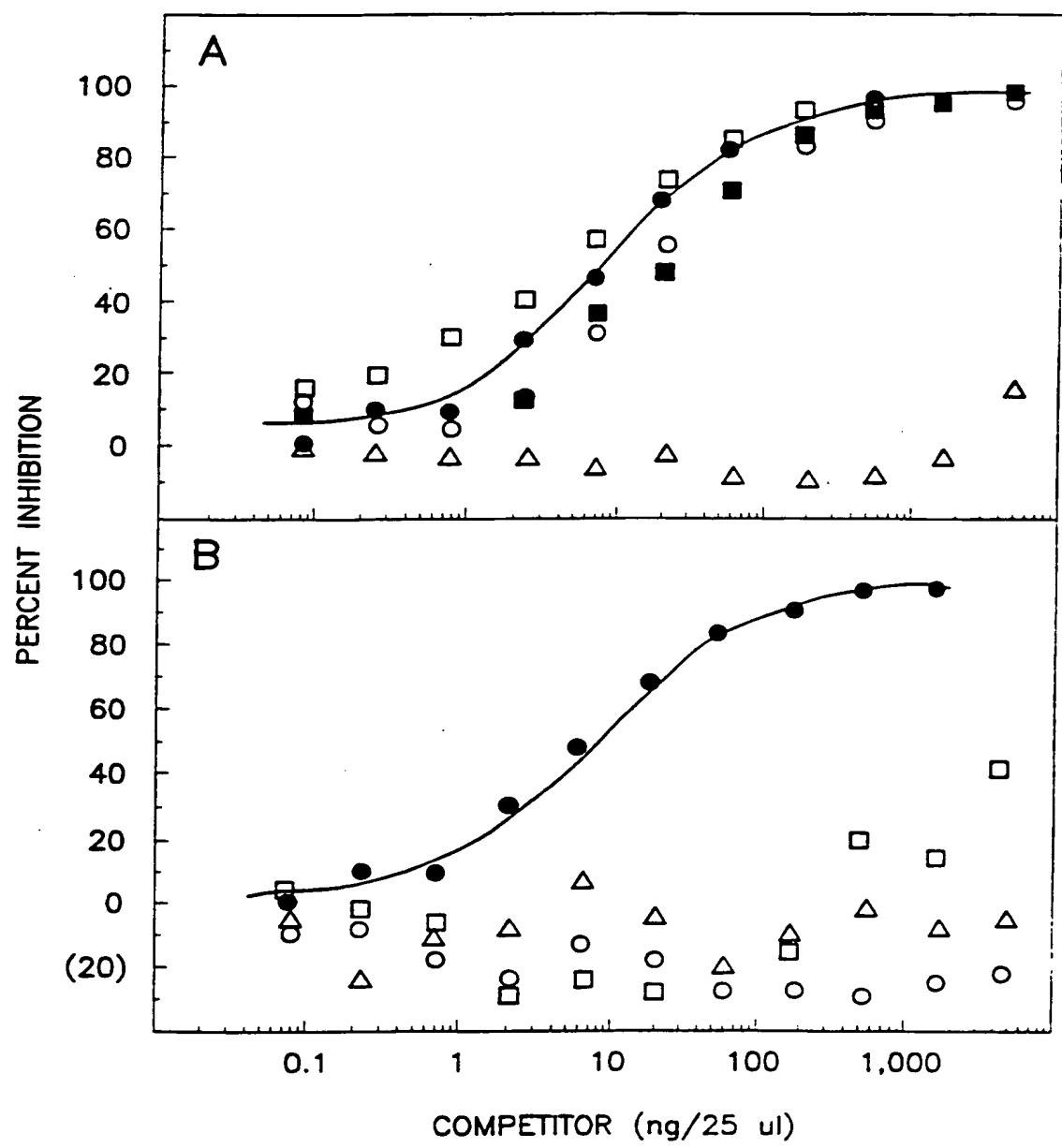


FIG. 11

A.

|        |            |                |                   |                 |                      |
|--------|------------|----------------|-------------------|-----------------|----------------------|
|        | .....      | .....          | .....             | .....           | .....                |
|        |            |                | CDR1              |                 |                      |
| LEN    | DIVMTQSPD  | SLAVSLGERATINC |                   | WYQQKPGQPPKLLIY |                      |
| HuCC49 | DIVMSQSPD  | SLAVSLGERVTINC | KSSQSLLYSGNQKNYLA | WYQQKPGQSPKLLIY |                      |
|        | CDR2       | .....          | .....             | CDR3            | .....                |
| LEN    | GVPDRFSGSG | GIDFTLT        | ISLQAEDVAVYYC     | FGQGTKLEIK      |                      |
| HuCC49 | WASARES    | GVPDRFSGSG     | GIDFTLT           | ISSVQAEDVAVYYC  | QYYYSYPLT FGAGTKLELK |

B.

|          |             |           |              |                     |         |
|----------|-------------|-----------|--------------|---------------------|---------|
|          | .....       | .....     | .....        | .....               | .....   |
|          |             |           | CDR1         |                     |         |
| 21/28'CL | QVQLVQSGAEV | KKPGASVKV | SCKASGYTFT   | WVRQAPGQRLEWMG      |         |
| HuCC49   | QVQLVQSGAEV | VVKPGASVK | I SCKASGYTFT | DHAIH WVKQNPGRLEWIG |         |
|          | CDR2        | .....     | .....        | .....               |         |
| 21/28'CL | YFSPGNDDFK  | YNERFKG   | KATLTADTS    | ASTAYVELSSLRSED     | AVYFCIR |
| HuCC49   |             |           |              |                     |         |
|          | CDR3        | .....     |              |                     |         |
| 21/28'CL | WGQGT       | LVTVSS    |              |                     |         |
| HuCC49   | SLNMAY      | WGQGT     | LVTVSS       |                     |         |

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**FIG. 12A**

 $\dot{A}$ [illegible]

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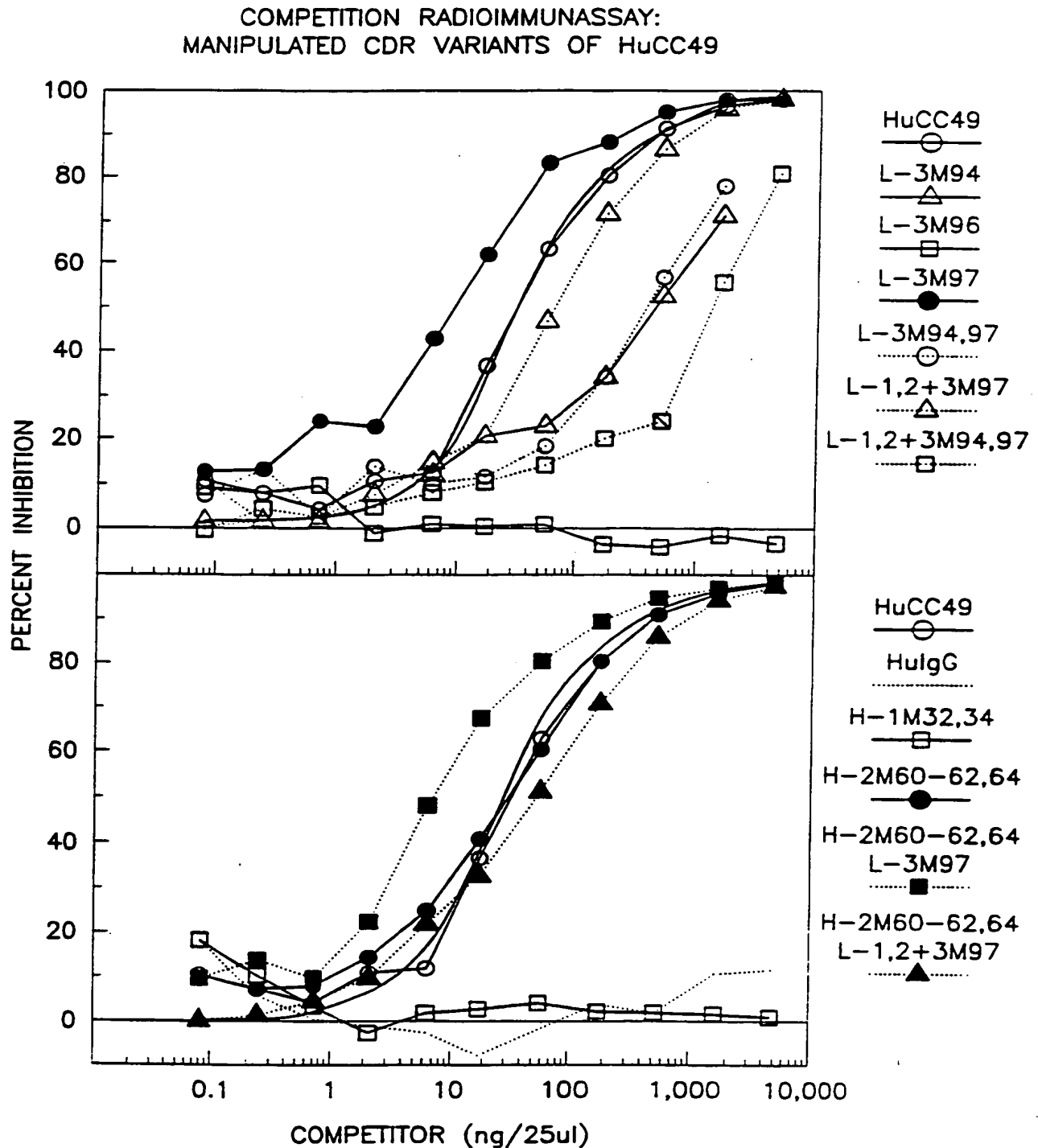
FIG. 12B

B.

```
1      ct a a g c t c c a c c a t g g a g t g g t c c t g g g t c t t c c t c t t c c t c c t g c t g c t g g g t g a g
60      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      g a t c g a a g g t g g t a c c t c a c c a g g a c c c a g a g g a g a g g a g g a c g a c a c c c a c t c
120      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      a g t g c a c t c c c a g g t c c a g c t g g t g c a g t c c g g c g c t g a g t c c c t g g c c g t g t c c c a g g g
61      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      t c a c g t a g g g t c c a g g t c g a c c a c g t c a g g c c g g a c t c a g g g a c c g g c a c a g g g a c c c
180      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      c g t g a a g a t t t c c t g c a a g g c a a g c g g c t a c a c c t t c a c t c t c t a t a g c g g a a a t c a g a a
121      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      g c a c t t c t a a a g g a c g t t c c g t t c g c c g a t g t g a a g t g a g a g a t a t c g c c t t t a g t c t t
181      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      g a a c a g a a t c c t g g a c a g c g c c t g g a g t g g a t t g g a t a t t t c t c t c c c g g a a a c g a t g a
241      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      c t t t g t c t t a g g a c c t g t c g c g g a c c t c a c c t a a c c t a t a a a g a g a g g c c t t t g c t a c t
300      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      t t t t a a g t a c a a t g a g a g g t t c a a g g g c a a g g c c a c a c t g a c t g c a g a c a c a t c t g c c c a g
241      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      a a a a t t c a t g t t a c t c t c c a a g t t c c c g t t c c g g t g t g a c t g a c g t c t g t g t a g a c g g t c
360      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      c a c t g c c c t a c g t g g a g c t c t c c a g c c t g a g a t c c g a g g a t a c t g c a g t g t a c t t c t g c a c
301      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      g t g a c g g a t g c a c c t c g a g a g g t c g g a c t c t a g g c t c c t a t g a c g t c a c a t g a a g a c g t g
360      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      a a g a t c c c t g a a t a t g g c c t a c t g g g g a c a g g g a a c c c t g g t c a c c g t c t c c a g c g c c a a
361      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      t t c t a g g g a c t t a t a c c g g a t g a c c c c t g t c c c t t g g g a c c a g t g g c a g a g g t c g c g g t t
420      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      a a c t a c g g g c c c a t
421      +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      t t g a t g c c c g g g t a
434
```

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FIG. 13



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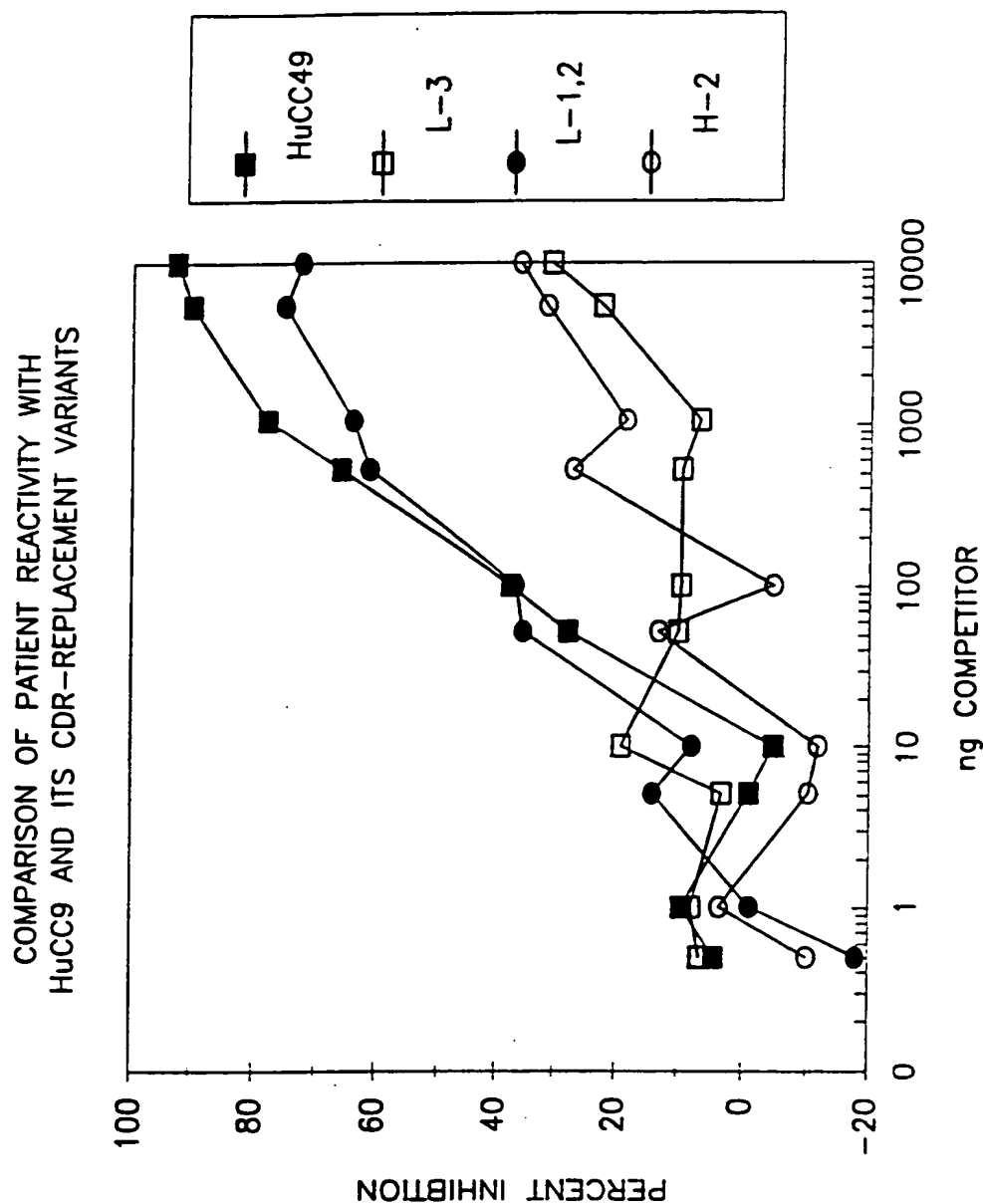
FIG. 14

HPLC ANALYSIS OF PATIENT REACTIVITY TO CDR SUBSTITUTION  
VARIANTS OF HuCC49

| COMPETITOR |                      | ANTIGEN<br>BINDING | PATIENTS          |      |      |      |
|------------|----------------------|--------------------|-------------------|------|------|------|
|            | CDR<br>SUBSTITUTIONS |                    | DG                | CP   | EA   | DS   |
| NONE       | ---                  |                    | 46.2 <sup>b</sup> | 32.2 | 56.8 | 33.5 |
| HuCC49     | ---                  | +++                | 0                 | 1.5  | 0.5  | 0    |
| HuIgG      | ---                  | -                  | 59.0              | N.D. | 63.6 | 46.4 |
| LIGHT      | L3M94                | +/-                | 30.2              | 20.3 | 16.4 | 28.9 |
|            | L3M96                | -                  | 39.2              | 31.1 | 42.9 | 35.2 |
|            | L3M97                | +++                | 0.6               | 1.3  | 0.7  | 2.4  |
|            | L3M94,97             | +/-                | 26.5              | 18.2 | 18.6 | 25.6 |
|            | L1,2+3M97            | ++                 | 21.3              | 17.6 | 23.8 | 17.1 |
|            | L1,2+3M94,97         | +                  | 53.2              | 38.1 | 44.2 | 37.3 |
| HEAVY      | 1M32,34              | -                  | 1.4               | 5.5  | 3.8  | 0.7  |
|            | 2M60-62,64           | ++                 | 24.4              | 17.9 | 21.8 | 16.5 |
| BOTH       | L3M97                | ++++               | 13.0              | 16.1 | 3.9  | 20.1 |
|            | H2M60-62,64          |                    |                   |      |      |      |
|            | L1,2+3M97            | ++                 | 33.0              | 30.7 | 24.9 | 32.1 |
|            | H2M60-62,64          |                    |                   |      |      |      |

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FIG. 15





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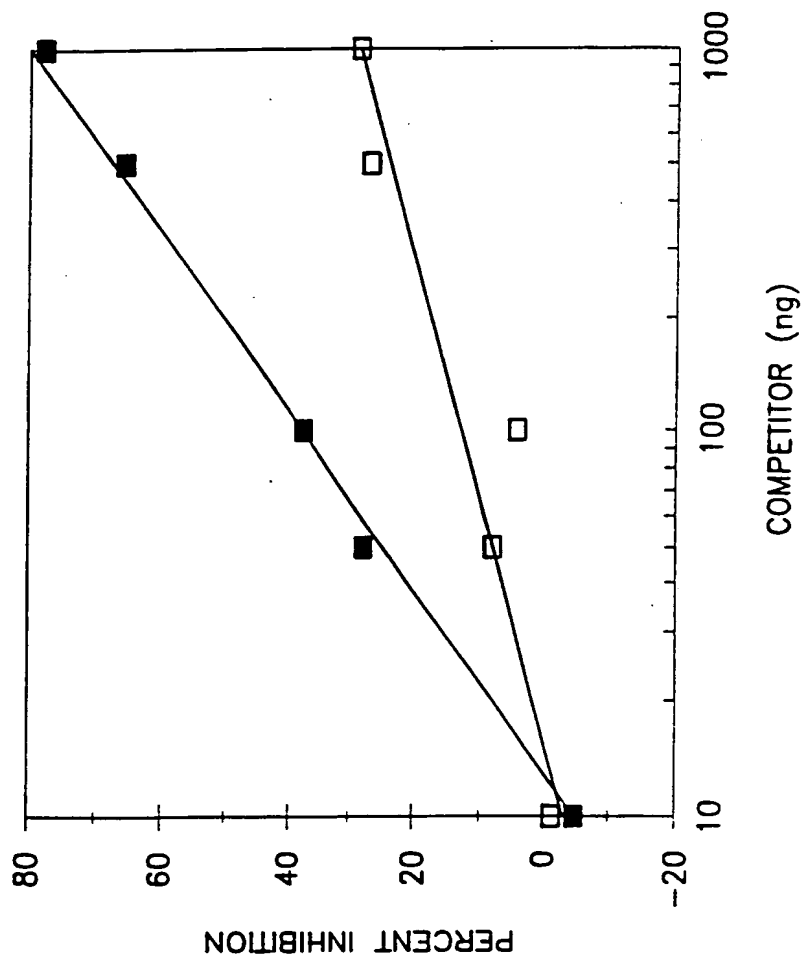


FIG. 16

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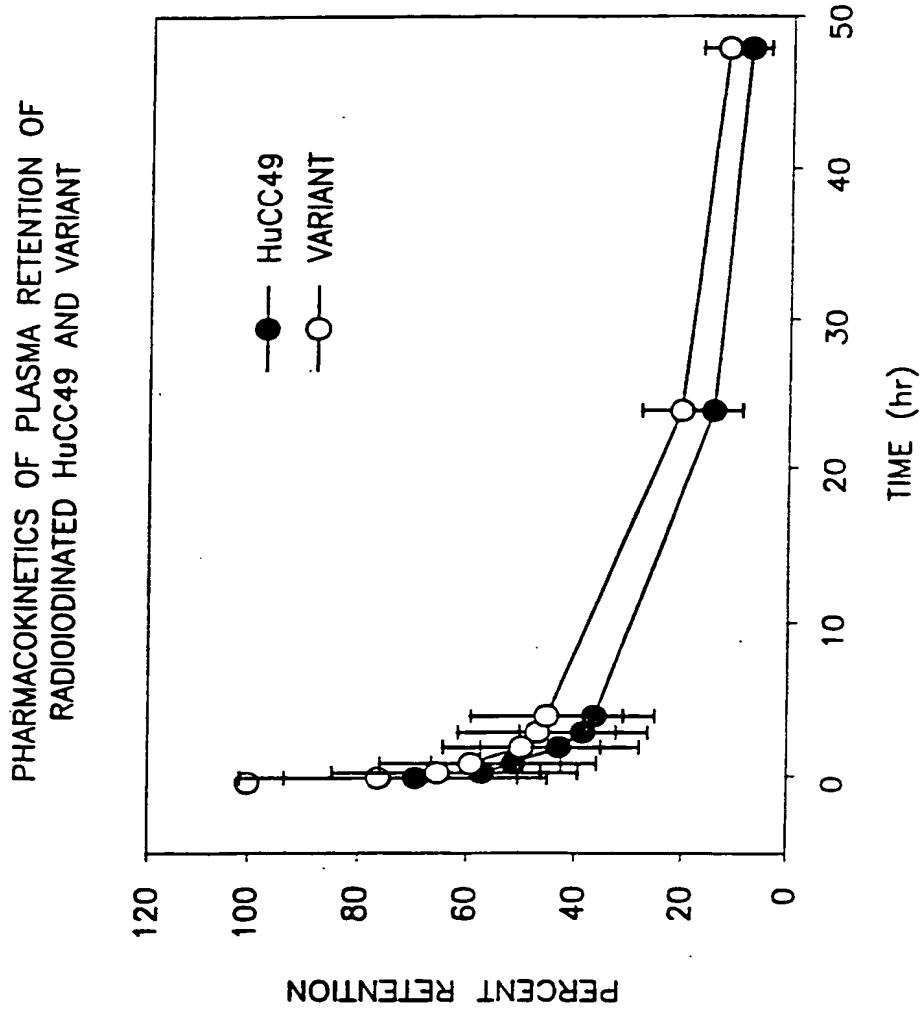


FIG. 17

FIG. 18

BIODISTRIBUTION OF I.V. ADMINISTERED RADIOLABELED HuCC49 AND VARIANT IN ATHYMIC MICE BEARING LS-174T HUMAN COLON CARCINOMA XENOGRAFTS: PERCENT OF INJECTED DOSE/GRAM

| ANTIBODY | ORGAN  | TIMEPOINTS (hr) |       |       |       |      |
|----------|--------|-----------------|-------|-------|-------|------|
|          |        | 24              | 48    | 72    | 120   | 168  |
| VARIANT  | TUMOR  | 15.83           | 23.75 | 21.01 | 17.74 | 9.21 |
|          | BLOOD  | 6.35            | 4.93  | 4.88  | 2.19  | 0.63 |
|          | LIVER  | 3.39            | 2.14  | 1.46  | 0.91  | 0.32 |
|          | SPLEEN | 5.90            | 6.04  | 2.55  | 2.43  | 3.96 |
|          | KIDNEY | 2.52            | 1.27  | 1.00  | 0.77  | 0.36 |
|          | LUNG   | 3.22            | 2.57  | 2.50  | 1.12  | 0.36 |
| HuCC49   | TUMOR  | 11.86           | 17.59 | 15.31 | 13.75 | 5.24 |
|          | BLOOD  | 4.17            | 2.94  | 2.85  | 1.29  | 0.18 |
|          | LIVER  | 4.77            | 3.05  | 1.41  | 0.70  | 0.12 |
|          | SPLEEN | 6.41            | 7.47  | 2.28  | 2.00  | 0.46 |
|          | KIDNEY | 1.86            | 0.92  | 0.70  | 0.57  | 0.14 |
|          | LUNG   | 2.17            | 1.58  | 1.46  | 0.68  | 0.12 |

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FIG. 19

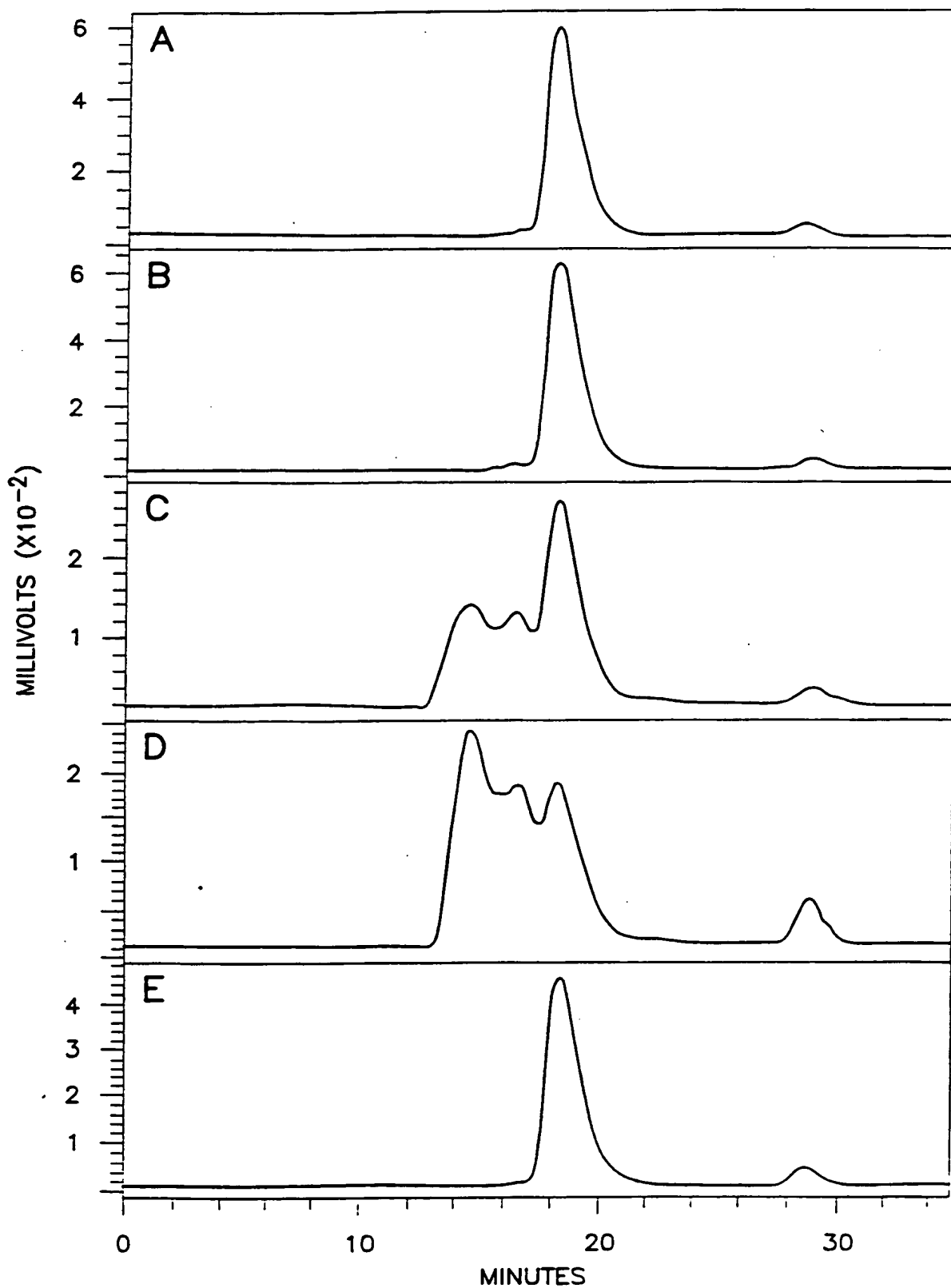
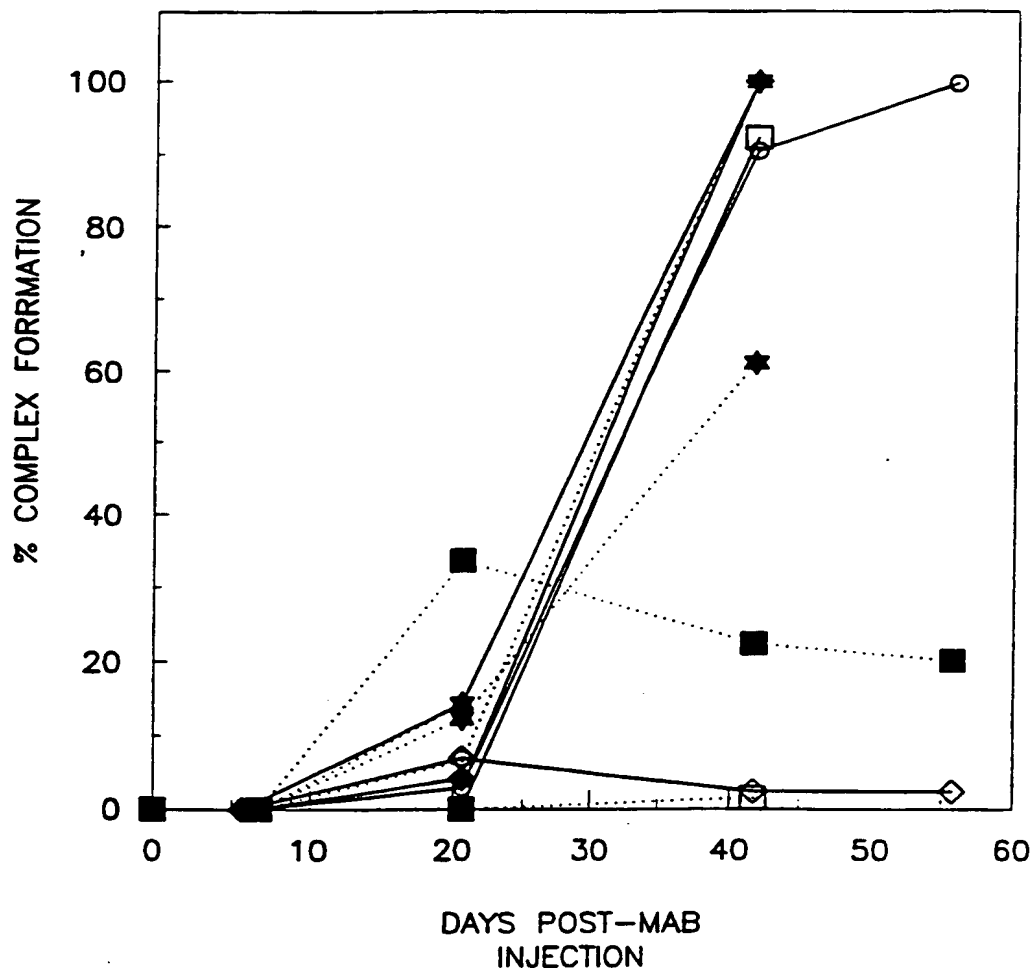
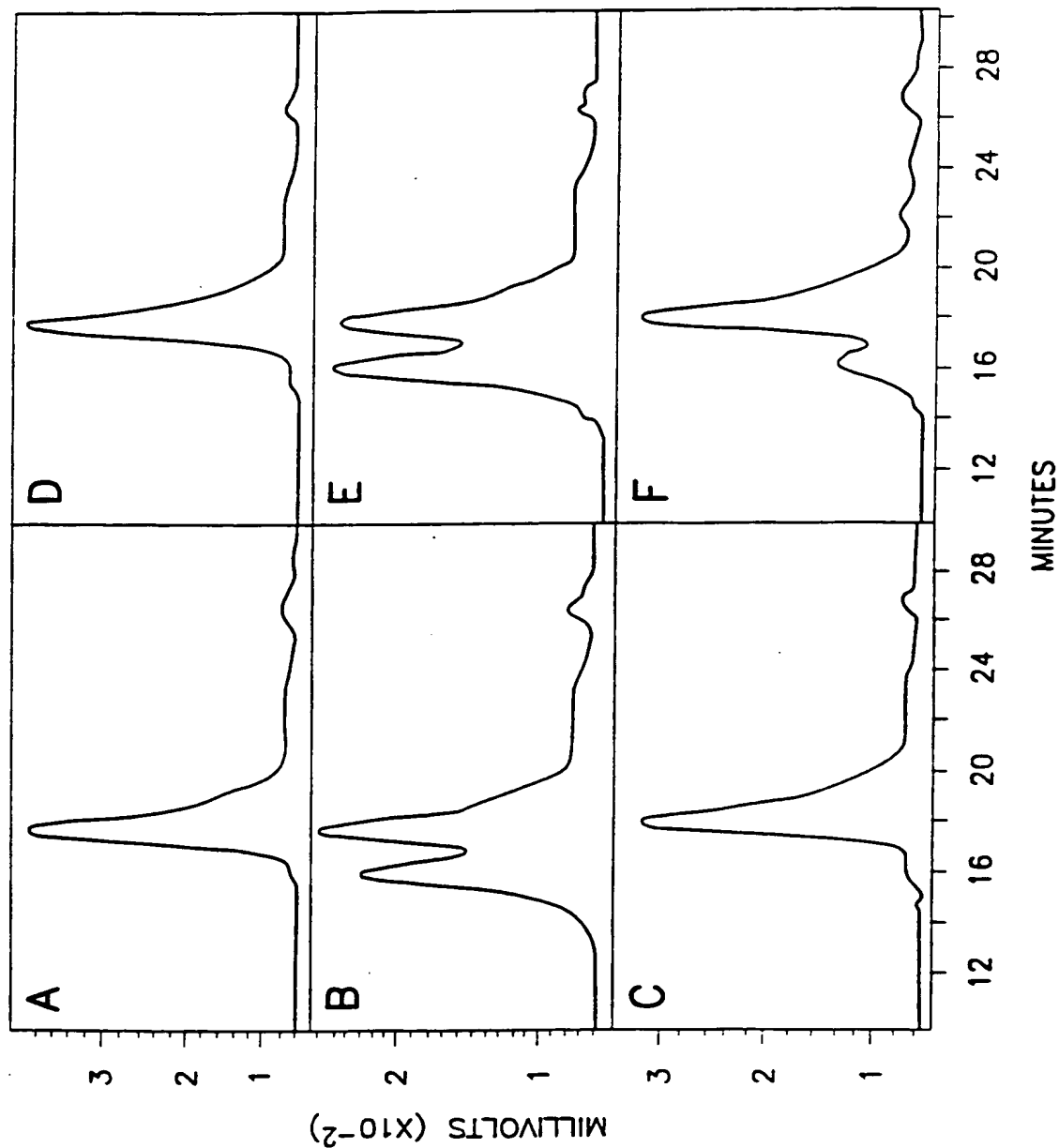


FIG. 20



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FIG. 21



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FIG. 22

